

WHAT IS CLAIMED IS:

1. A method of manufacturing an organic thin film transistor, comprising:  
forming a first conductive film over a first substrate having an insulating surface;  
5 forming a first insulating film on the first conductive film;  
forming a pair of second conductive films over the first insulating film;  
forming a second insulating film over the pair of second conductive films;  
forming an opening portion in the second insulating film over the first  
conductive film;  
10 superimposing a second substrate over the first substrate; and  
injecting a solution containing an organic material and a solvent into the  
opening portion.
2. A method of manufacturing an organic thin film transistor, comprising:  
15 forming a first conductive film over a first substrate having an insulating  
surface;  
forming a first insulating film over the first conductive film;  
forming a second insulating film over the first insulating film;  
forming an opening portion in the second insulating film over the first  
20 conductive film;  
forming a pair of second conductive films over the second insulating film;  
superimposing a second substrate over the first substrate;  
injecting a solution containing an organic material and a solvent into the  
opening portion; and  
25 drying the solvent.
3. A method of manufacturing an organic thin film transistor according to  
claim 1, wherein the opening portion is formed above the first conductive film.
- 30 4. A method of manufacturing an organic thin film transistor according to  
claim 2, wherein the opening portion is formed above the first conductive film.
5. A method of manufacturing an organic thin film transistor according to

claim 1, wherein the opening portion is an aperture formed in the second insulating film.

5 6. A method of manufacturing an organic thin film transistor according to claim 2, wherein the opening portion is an aperture formed in the second insulating film.

7. A method of manufacturing an organic thin film transistor according to claim 1, wherein a part of the superimposed first substrate and second substrate is  
10 immersed in the solution containing the organic material to inject the organic material into the opening portion.

8. A method of manufacturing an organic thin film transistor according to claim 2, wherein a part of the superimposed first substrate and second substrate is  
15 immersed in the solution containing the organic material to inject the organic material into the opening portion.

9. A method of manufacturing an organic thin film transistor claim 1, wherein a corner portion of the superimposed first substrate and second substrate is immersed in  
20 the solution containing the organic material to inject the organic material in the opening portion.

10. A method of manufacturing an organic thin film transistor claim 2, wherein a corner portion of the superimposed first substrate and second substrate is immersed in  
25 the solution containing the organic material to inject the organic material in the opening portion.

11. A method of manufacturing an organic thin film transistor according to claim 1, wherein the organic material is injected into the opening portion from a region  
30 where an end of the first substrate is aligned with an end of the second substrate.

12. A method of manufacturing an organic thin film transistor according to claim 2, wherein the organic material is injected into the opening portion from a region

where an end of the first substrate is aligned with an end of the second substrate.

13. A method of manufacturing an organic thin film transistor according to claim 1, wherein the organic material is injected into the opening portion from a region  
5 where an end of the first substrate is not aligned with an end of the second substrate.

14. A method of manufacturing an organic thin film transistor according to claim 2, wherein the organic material is injected into the opening portion from a region  
where an end of the first substrate is not aligned with an end of the second substrate.

15. A method of manufacturing an organic thin film transistor according to claim 13, wherein the solution containing the organic material is dropped onto the region where the end of the first substrate is not aligned with the end of the second substrate to inject the organic material into the opening portion.

16. A method of manufacturing an organic thin film transistor according to claim 14, wherein the solution containing the organic material is dropped onto the region where the end of the first substrate is not aligned with the end of the second substrate to inject the organic material into the opening portion.

17. A method of manufacturing an organic thin film transistor according to claim 1, further comprising:

forming a seal member to each of opposite sides of the second substrate, hardening the seal member, and fixing the first substrate to the second substrate; and  
25 injecting the solution into the opening portion and sealing the first substrate and the second substrate with a sealing material in an anaerobic atmosphere.

18. A method of manufacturing an organic thin film transistor according to claim 2, further comprising:

30 forming a seal member to each of opposite sides of the second substrate, hardening the seal member, and fixing the first substrate to the second substrate; and  
injecting the solution into the opening portion and sealing the first substrate and the second substrate with a sealing material in an anaerobic atmosphere.

19. A method of manufacturing an organic thin film transistor according to claim 1, further comprising:

forming a seal member to each of opposite sides of the second substrate,  
5 hardening the seal member, and fixing the first substrate to the second substrate; and  
injecting the solution into the opening portion and sealing the first substrate  
and the second substrate with a sealing material in an anaerobic atmosphere after the  
solvent is dried.

20. A method of manufacturing an organic thin film transistor according to claim 2, further comprising:

forming a seal member to each of opposite sides of the second substrate,  
hardening the seal member, and fixing the first substrate to the second substrate; and  
injecting the solution into the opening portion and sealing the first substrate  
15 and the second substrate with a sealing material in an anaerobic atmosphere after the  
solvent is dried.

21. A method of manufacturing an organic thin film transistor according to claim 1, wherein the first conductive film or the second conductive film is formed of a  
20 conductive paste.

22. A method of manufacturing an organic thin film transistor according to claim 2, wherein the first conductive film or the second conductive film is formed of a  
conductive paste.

23. A method of manufacturing an organic thin film transistor according to claim 21, wherein the conductive paste is formed by screen printing, roll coating, or ink  
jetting.

24. A method of manufacturing an organic thin film transistor according to claim 22, wherein the conductive paste is formed by screen printing, roll coating, or ink  
jetting.

25. An organic thin film transistor comprising:  
a first conductive film provided over an insulating surface;  
a first insulating film provided over the first conductive film;  
a pair of second conductive films provided over the first insulating film;  
5 a second insulating film having an opening portion which is provided over the  
pair of second conductive films; and  
an organic semiconductor film provided only in the opening portion.

26. An organic thin film transistor comprising:  
10 a first conductive film provided over an insulating surface;  
a first insulating film provided over the first conductive film;  
a second insulating film having an opening portion which is provided over the  
first insulating film;  
a pair of second conductive films provided over the second insulating film; and  
15 an organic semiconductor film provided only in the opening portion.

27. An organic thin film transistor according to claim 25, wherein the opening  
portion is provided above the first conductive film.

20 28. An organic thin film transistor according to claim 26, wherein the opening  
portion is provided above the first conductive film.

29. An organic thin film transistor according to claim 25, wherein the first  
conductive film or the second conductive film is formed of a conductive paste.

25 30. An organic thin film transistor according to claim 26, wherein the first  
conductive film or the second conductive film is formed of a conductive paste.

31. An organic thin film transistor according to claim 25, wherein the first  
30 conductive film functions as a gate electrode.

32. An organic thin film transistor according to claim 26, wherein the first  
conductive film functions as a gate electrode.

33. An organic thin film transistor according to claim 25, wherein the pair of second conductive films functions as a source electrode and a drain electrode.

5           34. An organic thin film transistor according to claim 26, wherein the pair of second conductive films functions as a source electrode and a drain electrode.

35. An organic thin film transistor according to claim 25, wherein the first insulating film functions as a gate insulating film.

10           36. An organic thin film transistor according to claim 26, wherein the first insulating film functions as a gate insulating film.

37. An organic thin film transistor according to claim 25, wherein the second  
15 insulating film is formed of acrylic, polyimide, silicon oxynitride, or silicon nitride.

38. An organic thin film transistor according to claim 26, wherein the second insulating film is formed of acrylic, polyimide, silicon oxynitride, or silicon nitride.

20           39. A semiconductor device comprising:  
a plurality of organic thin film transistors provided over an insulating substrate,  
the organic thin film transistors each comprising:

25               a first conductive film;  
a first insulating film provided over the first conductive film; and  
a pair of second conductive films provided over the first insulating  
film,

              a second insulating film having an opening portion which is provided  
over the pair of second conductive films; and

30               an organic semiconductor film provided only in the opening portion,  
wherein the first conductive film is provided to be held in common by the  
plurality of organic thin film transistors.

40. A semiconductor device comprising:

a plurality of organic thin film transistors provided over an insulating substrate,  
the organic thin film transistors each comprising:

a first conductive film;

a first insulating film provided over the first conductive film;

5 a second insulating film having an opening portion which is provided  
over the first insulating film;

a pair of second conductive films provided over the second insulating  
film; and

an organic semiconductor film provided only in the opening portion,  
10 wherein the first conductive film is provided to be held in common by the  
plurality of organic thin film transistors.

41. A semiconductor device according to claim 39, wherein the first conductive  
film is provided so as to be in parallel with a signal line.  
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42. A semiconductor device according to claim 40, wherein the first conductive  
film is provided so as to be in parallel with a signal line.

43. A semiconductor device according to claim 39, wherein the first conductive  
20 film is provided so as to intersect a signal line.

44. A semiconductor device according to claim 40, wherein the first conductive  
film is provided so as to intersect a signal line.

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